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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,593	04/08/2004	Gilbert A. Hawkins	87168WRZ	8151

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EXAMINER

CHOI, HAN S

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/820,593

Applicant(s)

HAWKINS ET AL.

Examiner

Han S. Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 3, 6-14, 19, 20, 23-25, 38-44 and 51-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 15, 16, 18, 21, 22, 26-30, 32, 35-37, 45, 49 and 50 is/are rejected.
- 7) ☒ Claim(s) 17, 31, 33, 34 and 46-48 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/29/05, 4/8/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, Species XVI in the reply filed on 10/10/06 is acknowledged. The traversal is on the ground(s) that the applicant disagrees with which claims are generic. This is not found persuasive because claims 2, 4, 5, 13, 14, 21, 22, and 46-50 are not common to all species.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 3, 6-14, 19, 20, 23-25, 38-44, and 51-57 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/10/06.

Therefore, claims 1, 2, 4, 5, 15-18, 21, 22, 26-37, and 45-50 will be examined, claims 1 and 45 are generic.

Claim Objections

3. Claim 45 is objected to because of the following informalities: In Line 2, "an fluid chamber" should be written as "a fluid chamber". Also, in line 6, "at least plate one orifice" should be written as "at least one plate orifice." Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4, 15, 21, 26, 27, 29, 30, 32, and 35-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Moon et al. (US Pat. 5,726,693).

Referring to claim 1:

- a printhead in [Paragraph 0041] shown in Fig. 5 comprising:
- a body [100a], portions of the body defining a fluid chamber [101a] and a nozzle orifice [102a bottom], the nozzle orifice [102a bottom] being in fluid communication with the fluid chamber [101a] in [Paragraph 0041];
- a drop forming mechanism [50'] operatively associated with the nozzle orifice [102a bottom] of the body [100a] in [Paragraph 0041]; and
- a plate [103a] removably positioned over the body [100a] (capable of), the plate [100a] having at least one orifice [102a top], the at least one orifice [102a top] being in fluid communication with the nozzle orifice [102a bottom] of the body [100a] in [Paragraph 0042] shown in Fig. 5A.

Referring to claim 2:

- the nozzle orifice [102a bottom] of the body [100a] having a diameter, wherein the at least one orifice [102a top] of the plate [103a] has a diameter, the diameter

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of the at least one orifice [102a top] of the plate [103a] being less than the diameter of the nozzle orifice [102a bottom] of the body [100a] shown in Fig. 5A.

Referring to claim 4:

- the body [100a] having a surface facing the plate [103a], the plate [103a] having a surface facing the body [100a], the surfaces being in contact with each other shown in Fig 5A.

Referring to claim 15:

- wherein the positions of the surfaces of the plate [103a] and the body [100a] are maintained relative to each other with a liquid in [Paragraph 0042] shown in Fig. 5.

Referring to claim 21:

- wherein the shape of the at least one orifice [102a top] of the plate [103a] is substantially round shown in Fig. 7.

Referring to claim 26:

- wherein the drop forming mechanism [50'] includes a heater in [Paragraph 0041].

Referring to claim 27:

- wherein the heater [50'] is a ring surrounding the nozzle orifice [102a bottom] in [Paragraph 0041] shown in Fig. 7.

Referring to claim 29:

- a heat conducting element [57'] positioned between the body [100a] and the plate [103a], the heat conducting element [57'] being operatively associated with the heater [50'] in [Paragraph 0041] shown in Figs. 5 and 7.

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Referring to claim 30:

- wherein the heat conducting element [57'] is a ring surrounding the at least one nozzle orifice [102a top] of the plate [103a] in [Paragraph 0041] shown in Figs. 5 and 7.

Referring to claim 32:

- a heat conducting element positioned on the plate [103], the heat conducting element being operatively associated with the heater [50] shown in Figs. 3 and 4.

Referring to claim 35:

- wherein the drop forming mechanism [50] includes at least one electrical contact [51'] in [Paragraph 0041] shown in Fig. 7.

Referring to claim 36:

- wherein the at least one electrical contact [51] is positioned on a surface of the body [100a] facing the plate [103a] shown in Figs. 5 and 7.

Referring to claim 37:

- a heater [50'] positioned between the body [100a] and the plate [103a], the heater [50'] being electrically connected to the at least one electrical contact [51'] in [Paragraph 0041] shown in Figs. 5 and 7.

Referring to claim 45:

- a printhead in [Paragraph 0041] comprising:
- a body [100a], portions of the body [100a] defining a fluid chamber [101a] in [Paragraph 0041] shown in Fig. 5.

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- a drop forming mechanism [50'] operatively associated with the fluid chamber [101a] in [Paragraph 0041] shown in Fig. 5.
- a removable plate [103a] having a first position [bottom of 103a] over the body [100a] and a second position [top of 103a] removed from the body [100a], the plate [103a] having at least one orifice [102a top], the at least one plate orifice [102a top] being in fluid communication with the fluid chamber [101a] of the body [100a] when the plate [103a] is located in the first position [bottom of 103a] over the body [100a] in [Paragraph 0041] shown in Fig. 5.

Referring to claim 49:

- wherein the printhead is operable to produce a fluid drop when the removable plate [103a] is located in the first position [bottom of 103a] over the body [100a] shown in Fig. 5.

Referring to claim 50:

- wherein the fluid drop is a liquid drop in [Paragraph 0041]

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al. (US Pat. 5,726,693) in view of Plesinger (US Pat. 5,563,641).

Moon et al. discloses the basic elements of the claimed invention except for teaching wherein the surfaces are maintained in contact with each other with a force adjustable external clamping mechanism.

Plesinger teaches a force adjustable external clamping mechanism [34] shown in Fig. 1A.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a force adjustable external clamping mechanism as taught by Plesinger with the printhead of Moon et al. for the purpose of allowing the orifice plate to be easily removed and replaced in the case of defect or failure in [Col. 2, Lines 28-30].

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al. (US Pat. 5,726,693) in view of Hirano et al. (US Pat. 6,120,130).

Moon et al. discloses the basic elements of the claimed invention except for wherein the positions of the surfaces of the plate and the body are maintained relative to each other with a material having a melting point less than 100°C.

Hirano et al. teaches ink having a melting point lower than 50°C.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the ink as taught by Hirano et al. with the printhead of Moon et al. for the purpose of exhibiting low toxicity to the human bodies and being colorless in [Col. 27, Lines 51-53].

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al. (US Pat. 5,726,693) in view of Matta (US Pat. 6,183,067).

Moon et al. discloses the basic elements of the claimed invention except for wherein the shape of the at least one orifice of the plate is other than round.

Matta teaches square nozzles in [Col. 6, Lines 6-9].

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the nozzle shape as taught by Matta with the printhead of Moon et al. for the purpose using an anisotropic etch for simple fabrication of the nozzle in [Col. 6, Lines 10-13].

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al. (US Pat. 5,726,693) in view of Min et al. (US 2003/0210299).

Moon et al. discloses the basic elements of the claimed invention except for wherein the heater ring is located no more than 200 microns from the center of the at least one nozzle orifice of the plate.

Min et al. teaches wherein the heater ring [130] is located no more than 10 microns from the center of the at least one nozzle orifice in [Paragraph 0033] shown in Fig. 3A.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to position the heater at a proximity taught by Min et al. to the nozzle orifice of Moon et al. for the purpose of more efficient bubble nucleation.

Allowable Subject Matter

11. Claims 17, 31, 33, 34, and 46-48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art references (US Pat. 5,726,693; US Pat. 6,817,698; US Pat. 5,684,519) cited in the PTO 892 form show elements that are deemed to be relevant to the present invention. These references should be reviewed.

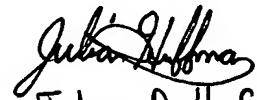
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Han S. Choi whose telephone number is (571) 272-8350. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HSC
11/17/06


Julian D. Huffman
Art Unit 2853
21 November 2006